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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,591	07/05/2001	Gregory S. Marczak		4021

24335 7590 09/03/2004

WARNER NORCROSS & JUDD LLP  
900 FIFTH THIRD CENTER  
111 LYON STREET, N.W.  
GRAND RAPIDS, MI 49503-2487

EXAMINER

CULBERT, ROBERTS P

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/899,591

**Applicant(s)**

MARCZAK ET AL.

**Examiner**

Roberts Culbert

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-10,13-17,20,22,23 and 26-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-10,13-17,20,22,23 and 26-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Response to Arguments***

Applicant's arguments filed 2/20/04 have been fully considered but they are not persuasive as explained in detail below.

Applicant has argued that the declaration by James Nalewick filed under 37 CFR 1.132 establishes that *"(a) the combination of references proposed in the Office Action would render the references inoperable for their intended purposes; (b) the combination of references proposed in the Office Action would have changed the principles of operation of the processes and techniques shown in the references; and/or (c) there was no motivation or suggestion in the art, as of the filing date of the present application that would have prompted one of ordinary skill in the art to make the combination of references."*

In support of the above statement the declaration by James Nalewick filed under 37 CFR 1.132 argues:

*First, one skilled in the art would not have modified the piece-part processing of Arrowsmith to accommodate continuous web processing because to do so would change the principles of operation of the Arrowsmith Patent...thus, Arrowsmith dips an entire part into phosphoric acid under carefully selected conditions--dwell times, temperature and concentration--that are specific and unique to piece-part dipping. These piece-part conditions cannot be relied upon for treating a continuous web of aluminum, which requires substantially different operating parameters due to the differences in dwell time in piece-part processing tank and the rapid application of material to a continuous web in continuous web processing."*

The argument is not persuasive because there in no statement in Arrowsmith that indicates that the method of Arrowsmith is directed at "piece-part" processing as argued by applicant. There is no indication in either of the Arrowsmith references that the surface of the aluminum being dipped in not a sheet of aluminum or that the method is applied to an aluminum

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"part" that could be in some way distinguished from a sheet or web of aluminum. Applicant is requested to specifically point out where Arrowsmith teaches "piece-part" processing as this difference appears to be central to applicant's arguments. Furthermore applicant has provided no evidence that the dwell times, temperature and concentrations of a continuous web process are different than those disclosed in the Arrowsmith references. In fact the dwell times, temperature and concentrations of the Arrowsmith patent fall into the ranges claimed by applicant for the continuous web process. Note that even if the claimed ranges were outside of the processing parameters of the Arrowsmith references, the variables of time temperature and concentration are notoriously well-recognized result effective variables in the etching art, and are routine experimentation would have been expected to optimize them. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Note that, in general, changes in temperature, concentrations, or other process conditions of an old process, do not impart patentability unless the recited changes are critical, i.e., they produce a new and unexpected result.

The declaration by James Nalewick further argues:

*"The Arrowsmith Patent relies on the controlled submersion of an anodized aluminum part in phosphoric acid 1) to modify the outer surface of the anodized aluminum part so that the surface bonds well to adhesives, and 2) to ensure that the inner portions of the aluminum part remain dense, corrosion resistant and hydration resistant. Col. 3, Lns. 36-51. Thus, in Arrowsmith, all of outer surfaces of the anodized part are necessarily etched with the phosphoric acid. Again, this is to prevent hydration of the aluminum by water, which may reduce the strength of the joint and lead to premature joint failure. Col. 1, Lns. 61-63. Accordingly, one skilled in the art would and have been deterred from, not motivated to, etch only one side of an aluminum part of Arrowsmith."*

The argument is not persuasive because as stated above, there is no statement in the Arrowsmith Patent that indicates that the method of Arrowsmith is directed at "piece-part" processing as argued by applicant. Further, although Arrowsmith clearly discusses the inner and outer portions of the surface that is etched, this discussion is clearly related to the inner and outer

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portions of the anodic layer and has nothing to do with the inner and outer sides of an aluminum piece as misread by applicant. There is nothing in Arrowsmith that teaches that all surfaces of the aluminum are etched. Arrowsmith in fact teaches away from etching all surfaces the aluminum by indicating that the method is suitable for application to localized areas. (Col. 4, Lines 15-18) Clearly, the invention of Arrowsmith is directed at treating surfaces of aluminum that are to be bonded, painted or otherwise coated.

The declaration by James Nalewick further argues:

*"Furthermore, the phosphoric acid processing of the Arrowsmith Patent is very aggressive--so much so that it continues to dissolve the alumina after cessation of anodizing current encountered in commercial anodizing. Col. 2, Lns. 29-34. Accordingly, one skilled in the art as of the filing date of the application would not have attempted to combine the Arrowsmith technology with metal foil technology (relied on in the Office Action for one-sided treatment of metal) because of the aggressive nature of phosphoric acid anodizing and its potential to completely eat through thin metallic foils thereby destroying the product."*

The argument is not persuasive because it is well known to use phosphoric acid on metallic foils in the art. In fact, as admitted in the background of the instant application, "Currently, most anodized aluminum is manufactured in two-sided sheet or coil form, where (1) both sides of the sheet or coil are anodized with a sulfuric acid anodizing process or (2) both sides of the sheet or coil are anodized with a phosphoric acid anodizing process." Applicant's statement appears to contradict what is well known in the art since phosphoric acid obviously does not necessarily destroy a continuous aluminum sheet. Furthermore applicant has provided no evidence to support such a claim. In addition, no thickness for aluminum is referred to in applicant's claimed invention, so an argument regarding "thin metallic films" is not relevant to the claimed invention. Moreover, the teaching of Arrowsmith Patent regarding phosphoric acid is irrelevant since the Publication to Arrowsmith (that teaches etching with sodium hydroxide) is relied upon to teach the claimed invention.

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The declaration by James Nalewick further argues:

*First, one skilled in the art would not have sealed the anodized coating of the Arrowsmith Patent with Mosier's seal because there was no motivation in the art as of the filing date of the application to do so. The Arrowsmith Patent teaches hard anodizing the aluminum with sulfuric acid to produce a thick layer, which is environmentally stable and unaffected by the presence of water, of a dense-packed, thick-walled anodic coating (alumina). Col. 2, Lns. 59-63. Those skilled in the art as of the filing date of the application believed that such hard-anodized coatings did not typically require a sealing layer because such a layer added little additional protection and/or stability to the hard-anodized layer. Moreover, those skilled in the art as of the filing date of the application believed that it would have been counterproductive to first seal an anodizing layer and then remove both that sealed layer and a portion of the anodic layer because to do so would add additional processing steps and would simply remove what was previously added (i.e., the sealing layer). Likewise, there would have been no motivation in the art as of the filing date of the application to color (taught in Schneeberger) before the etching step as suggested in the Office Action, because the etch would remove the coloring entirely, therefore rendering that step useless. To etch away the color previously added would appear a waste of resources to one of skill in the art.*

The argument is not persuasive because, as stated in Schneeberger et al, it is well known in the art to color sulfuric acid anodized aluminum in order to provide a decorative finish. Schneeberger et al. further teaches that sealing a sulfuric acid anodized layer improves resistance of the surface to corrosion, and prevents the colorant from being washed out. Mosier is cited to further teach that the sealing step is a conventional process that is notoriously old and well known in the art of producing anodized aluminum. Applicant has provided no evidence to support the claim that the sulfuric acid anodized coatings of the Arrowsmith Patent were known not to require a sealing layer. Note that the thickness of the sulfuric acid anodized oxide is 20 $\mu$ m in both the Arrowsmith publication and the Patent to Schneeberger et al. Therefore, it is well known to seal such anodized layers in on contrast with applicant's declaration. Applicant has provided no evidence to support the statement that the etching step of Arrowsmith would remove

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well known coloring and/or sealing layers. As one of ordinary skill in the art would recognize, the colorant and sealant layers do not reside on the surface of the anodized aluminum, but are instead trapped deep within pores in the oxide layer of the anodized aluminum (See Schneeberger et al. Columns 1-2, for example). One of ordinary skill in the art would expect that coloring and sealing layers would not be removed by the surface etching process of the Arrowsmith publication since only the outermost portion of the anodic oxide layer is etched.

For the reasons explained above, the declaration filed under 37 CFR 1.132 filed 7/26/04 is insufficient to overcome the rejection of the claims as set forth below.

Applicant has further argued, *"even if the references were hypothetically combined, with regard to the amended claims, the references do not disclose, teach or suggest..."*

The argument is moot, as the new rejections set forth below address the newly added limitations of the amended claims.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 3, 4, 6-10, 13-17, 20, 22, 23, 26-28 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,624,752 to Arrowsmith et al. in view of the publication to Arrowsmith et al. *"The enhancement of adhesive joint strength by extending the surface of anodized aluminum"* and in further view of U.S. Patent 4,215,194 to Shepherd, U.S. Patent 4,398,994 to Beckett, U.S. Patent 4,235,682 to Schneeberger et al. and U.S. Patent 3,671,333 to Mosier.**

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The Arrowsmith Patent 4,624,752 teaches a method for treating aluminum to improve adhesion to a coating comprising a first anodization step (Col. 4, lines 31-35) in sulfuric or chromic acid to form an anodic layer, followed by an etching step (Col. 4, Lines 52-55) using phosphoric, chromic or a mixture of sulfuric and chromic acids to form a roughened surface. The acid etching step is used to dissolve a first anodic layer portion while roughening a remaining portion of the anodic layer formed in the anodization step. (Col. 4, Lines 59-63) The Arrowsmith Patent teaches etching in a phosphoric acid at a temperature of 60°C (140°F) for a period of 1 minute (Col. 4, Lines 52-58). Note that the admitted prior art (background of the instant application) teaches that it is conventional to manufacture anodized aluminum in sheet form.

The Arrowsmith Patent does not teach etching with a composition of sodium hydroxide. However, The Publication to Arrowsmith "*The enhancement of adhesive joint strength by extending the surface of anodized aluminum*" teaches that sodium hydroxide may be used instead of phosphoric acid to improve the adhesion properties of an anodized aluminum surface. It would have been obvious to one of ordinary skill in the art at the time of invention to use sodium hydroxide or phosphoric acid in the method of the Arrowsmith Patent since the Arrowsmith Publication teaches that either composition is suitable for modifying an anodized aluminum surface to increase adhesion of a coating. Note the example of Arrowsmith teaches a dipping time of 30 seconds in 0.1M NaOH at 25°C.

The Arrowsmith Patent does not teach application of the process to a continuous web of aluminum, however this step would have been obvious to one of ordinary skill in the art at the time of invention in order to provide commercial aluminum (Col. 4, lines 15-18) with a surface that will strongly adhere to coatings (Col. 1, Lines 15-24). Note that it is conventional to manufacture anodized aluminum in two-sided sheet form as admitted by applicant in the background of the instant application.

Regarding the limitation of selectively etching one side of the anodized aluminum, Official Notice is taken of the fact that applications requiring a bonding surface on only one side of an aluminum substrate are old and well known in the art of producing aluminum for commercial use. It would have been obvious to one of ordinary skill in the art at the time of invention to apply the



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method of Arrowsmith to one side of an aluminum sheet or web in order to provide commercial aluminum for such applications.

The Arrowsmith Patent does not teach advancing the web of aluminum over a roller, the roller at least partially submersed in the etching composition, wherein the roller transfers the composition to and selectively etches the first side but not the second side. The Arrowsmith Patent teaches dipping a surface of the anodized aluminum in the etching composition. However, it is well known in the etching art that an etching composition may be applied to a sheetmetal workpiece using dipping, spraying, rolling, brushing etc. See for example (Col. 5, Lines 25-27) of U.S. Patent 4,215,194 to Shepherd. It would have been obvious to one of ordinary skill in the art at the time of invention to use rolling, spraying or dipping to apply the etching composition as these techniques are recognized in the art to be equivalent methods of applying an etching composition to a workpiece such as sheetmetal. U.S. Patent 4,398,994 to Beckett teaches a method for etching a web of aluminum with sodium hydroxide by advancing the web of aluminum over a roller, the roller at least partially submersed in the etching composition, wherein the roller transfers the composition to and selectively etches the first side but not the second side. Note that the web remains unsubmerged in the composition as it is advanced over the roller, and the first side of the web is contacted while the second side remains uncontacted by the etching composition. It would have been obvious to one of ordinary skill in the art at the time of invention to apply the method of Arrowsmith to one side of an aluminum sheet or web using a partially submersed roller as taught by Beckett in order to apply an etching composition to one side of a metallic web.

Arrowsmith does not teach the steps of coloring and sealing the anodic layer before the etching (roughening) step. However the step of sealing an anodic layer after formation is notoriously old and well known in the art of forming anodized aluminum surfaces. For example, U.S. Patent 3,671,333 to Mosier teaches that it is conventional in the art to seal an anodized aluminum after it is removed from the anodizing bath. (Col. 3, Lines 26-28) and (Col. 5, Lines 74-75) U.S. Patent 4,235,682 to Schneeberger et al. teaches that it is known to seal sulfuric acid anodized aluminum to resist corrosion (See Col. 1-2, for example). It would have been obvious to

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one of ordinary skill in the art at the time of invention to seal the color and seal the anodic layer as taught by Schneeberger et al. in order to provide a decorative finish, improve corrosion resistance and prevent colorant from being washed out as taught by Schneeberger et al.

Regarding Claim 7, since the etching composition and material to be etched are the same in both the prior art references and the claimed invention, it may be assumed that either the bonding layer would be inherently formed about 4-10 nanometers in depth as claimed, or that the claimed feature arises from essential limitations not present in the claim. Furthermore, manipulating the known process variables such as etchant concentration, time and temperature to optimize adhesion strength would be routine experimentation to one of ordinary skill in the art and would be expected to produce a surface with the claimed bonding layer.

Regarding Claim 22, since the etching composition and material to be etched are the same in both the prior art references and the claimed invention, it may be assumed that either the first side bonding layer would have the cohesive bond failure as claimed, or that the claimed feature arises from essential limitations not present in the claim. Furthermore, manipulating the known process variables such as etchant concentration, time and temperature to optimize adhesion strength would be routine experimentation to one of ordinary skill in the art and would be expected to produce a surface with the claimed tensile strength.

Regarding Claim 28, although the Publication to Arrowsmith does not explicitly teach a temperature of 100-200°F, Arrowsmith clearly recognizes that variables such as concentration and temperature are result-effective (See Results and Discussion) and therefore it would have been obvious to optimize them. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

**Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,624,752 to Arrowsmith et al. in view of the publication to Arrowsmith et al. "*The enhancement of adhesive joint strength by extending the surface of anodized aluminum*", U.S. Patent 4,215,194 to Shepherd, U.S. Patent 4,398,994 to Beckett, U.S. Patent 4,235,682 to Schneeberger et al. and U.S. Patent 3,671,333 to Mosier, as applied above, and in further view of U.S. Patent 3,898,095 to Berdan et al.**

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As applied above, Arrowsmith in view of Arrowsmith, Shepherd, Schneeberger and Mosier discloses the method of the invention substantially as claimed, but does not teach preventing the etching composition from contacting and etching the second side by applying fluids against the second side.

Referring to the sole figure, Berdan teaches a method for etching a continuous web of aluminum (10) having a first side and a second side that includes preventing the etching composition from contacting and etching the second side by applying fluids (22) against the second side. See also (Col. 3, Lines 41-49).

It would have been obvious to one of ordinary skill in the art to prevent the etching composition from contacting and etching the second side by applying fluids against the second side as shown by Berdan in order to prevent unwanted etching of the second side.

**Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,624,752 to Arrowsmith et al. in view of the publication to Arrowsmith et al. "*The enhancement of adhesive joint strength by extending the surface of anodized aluminum*", U.S. Patent 4,215,194 to Shepherd, U.S. Patent 4,398,994 to Beckett, U.S. Patent 4,235,682 to Schneeberger et al. and U.S. Patent 3,671,333 to Mosier, as applied above, and in further view of U.S. Patent 4,013,498 to Frantzen et al.**

As applied above, Arrowsmith in view of Arrowsmith, Shepherd, Schneeberger and Mosier discloses the method of the invention substantially as claimed, but does not teach preventing the etching composition from contacting and etching the second side by covering the second side with a protective shield.

Frantzen teaches covering a sheet of metallic material with a removable shield on one side to prevent contact with an etching composition. See Abstract.

It would have been obvious to one of ordinary skill in the art at the time of invention to use the shield as shown by Frantzen in order to prevent unwanted etching of the second side from the etching composition contacting and etching the first side.

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**Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. Culbert



GREGORY MILLS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700